

FULL VERSION OF PENDING CLAIMS

1 Claims 1-17 (cancelled)

1 Claim 18 (new): A cathode ray tube comprising:

2 a face plate having a phosphor screen on an inner main surface thereof;

3 an electron gun operable to emit an electron beam toward the phosphor screen;

4 a frame that holds a mask at a place between the electron gun and the inner main

5 surface and closer to the inner main surface, so that the mask is substantially in parallel with the

6 inner main surface; and

7 an internal magnetic shield that is a pyramid having two openings respectively at

8 an apex and a bottom of the pyramid, has two opposite long sides and two opposite short sides,

9 and is deposited to surround a path of the electron beam with the apex of the pyramid being on a

10 side of the electron gun, wherein an end of the internal magnetic shield being the bottom of the

11 pyramid is attached, inside the cathode ray tube, to the frame, and two corners of each long side

12 are cut to extend the opening on the side of the electron gun.

1 Claim 19 (new): The cathode ray tube of Claim 18, wherein

2 a length of each cut along an edge of each long side demarking the opening on the

3 side of the electron gun is less than half of a length of the edge.

1 Claim 20 (new): The cathode ray tube of Claim 19, wherein

2 two corners of each short side are cut to extend the opening on the side of the

3 electron gun so that the cuts of the long sides and the short sides extend to each other at each

4 corner.

1 Claim 21 (new): The cathode ray tube of Claim 20, wherein

2 bottoms of the cuts of the long and short sides are continuous without a step.

1 Claim 22 (new): The cathode ray tube of Claim 20, wherein

2 an equation " $H1 > H2$ " is satisfied, $H1$ representing a depth of the cuts of the long

3 sides, and $H2$ representing a depth of the cuts of the short sides.

1 Claim 23 (new): The cathode ray tube of Claim 22, wherein

2 the electron beam emitted from the electron gun is deflected vertically or
3 horizontally by a deflection magnetic field and scans the phosphor screen, and

4 in a magnetic flux which acts on an electron beam that passes through either an
5 upper or lower area each occupying 20% of an electron beam passing area along a vertical
6 scanning direction,

7 an equation " $B1 > B2$ " is satisfied, $B1$ representing a magnetic flux density
8 generated at the opening on the side of the electron gun in a direction from a tube axis toward the
9 upper or lower area, and $B2$ representing a density of each magnetic flux generated at both ends
10 of the electron beam passing area in a horizontal scanning direction passing the tube axis, and

11 an equation " $B11 > B12$ " is satisfied, $B11$ representing a magnetic flux density
12 generated at the opening on the side of the electron gun in a direction from the tube axis toward
13 the center of the upper or lower area, and $B12$ representing a density of each magnetic flux
14 generated at the opening on the side of the electron gun in a direction from the tube axis toward
15 both cuts at both ends in a horizontal direction of the upper or lower area, wherein the tube axis
16 is an axis of the electron beam passing area.

1 Claim 24 (new): The cathode ray tube of Claim 23, wherein

2 an equation " $R1 > R2$ " is satisfied, R1 representing a curvature of a magnetic flux
3 being absorbed by both ends of the internal magnetic shield in a vicinity of the opening on the
4 side of the electron gun in a vertical scanning direction, and R2 representing a curvature of a
5 magnetic flux being absorbed by both ends of the internal magnetic shield in the vicinity of the
6 opening on the side of the electron gun in a horizontal scanning direction, and

7 an equation " $R11 > R12$ " is satisfied, R11 representing a curvature of a magnetic
8 flux being absorbed in a vicinity of the opening on the side of the electron gun in a vertical
9 scanning direction at the center of the upper or lower area, and R12 representing a curvature of a
10 magnetic flux being absorbed in a vicinity of the opening on the side of the electron gun at cuts
11 at both ends in a horizontal direction of the upper or lower area, wherein the tube axis is an axis
12 of the electron beam passing area.

1 Claim 25 (new): The cathode ray tube of Claim 18, wherein

2 each long side has a rectangular extension at a center in a horizontal direction, by
3 having two cuts at the opening on the side of the electron gun, and the extension is composed of
4 a plurality of projections.

1 Claim 26 (new): The cathode ray tube of Claim 25, wherein

2 each of the plurality of projections is rectangular or semi-circle-shaped.

1 Claim 27 (new): The cathode ray tube of Claim 18, wherein
2 each short side is cut in a shape of a letter V, wherein a width, in a vertical
3 direction, of the cut gradually decreases as the cut advances from an edge of each short side on
4 the side of the electron gun toward the face plate.

1 Claim 28 (new): The cathode ray tube of Claim 27, wherein
2 the cut of each short side widens upward and downward half way through a
3 distance between the edge of each short side on the side of the electron gun and an end of the cut
4 on a side of the face plate.

1 Claim 29 (new): The cathode ray tube of Claim 18, wherein
2 the frame holds the mask by applying a tension to the mask.

1 Claim 30 (new): In a magnetic shield for use within a cathode ray tube, the cathode ray
2 tube having at least one source of an electron beam, wherein
3 the magnetic shield is in the shape of a hollow rectangular frustum, the first and
4 third sides of the hollow rectangular frustum being formed of two opposite long sides, the second
5 and fourth sides of the hollow rectangular frustum being formed of two opposite short sides, the
6 interface between each adjacent long side and short side forming corner joints that are
7 continuous from the substantially wider base to the substantially narrower top of the hollow
8 rectangular frustum, the magnetic shield being disposed to surround the path of the electron
9 beam with the top of the hollow rectangular frustum positioned near the source of the electron
10 beam, the electron beam defining an axis from the top to the base of the rectangular frustum, the
11 improvement comprising:

12 each top edge of each long side of the hollow rectangular frustum has a long side
13 extension of height H1 forming a planar continuation of each long side in the direction of the top
14 of the hollow rectangular frustum, each long side extension being centered along the top edge of
15 each long side, each long side extension having lateral edges separated from the nearest corner
16 joint by a width W1 along the top edge of each long side, to enable the magnetic shield to reduce
17 the deviation of an electron beam within the magnetic shield caused by any external magnetic
18 field.

1 Claim 31 (new): The magnetic shield of Claim 30, wherein

2 the width W1 is less than one-half the width of the entire top edge of each long
3 side at the top of the hollow rectangular frustum.

1 Claim 32 (new): The magnetic shield of Claim 30, wherein

2 each long side extension is substantially a rectangular shape.

3 Claim 33 (new): The magnetic shield of Claim 30, wherein

4 each long side extension is substantially a trapezoidal shape.

1 Claim 34 (new): The magnetic shield of Claim 30, wherein

2 each long side extension is substantially a triangular shape.

1 Claim 35 (new): The magnetic shield of Claim 30, wherein

2 each long side extension is a plurality of projections.

1 Claim 36 (new): The magnetic shield of Claim 35, wherein

2 the plurality of projections are rectangular.

1 Claim 37 (new): The magnetic shield of Claim 35, wherein
2 the plurality of projections are semicircular.

1 Claim 38 (new): The magnetic shield of Claim 35, wherein
2 the plurality of projections are trapezoidal.

1 Claim 39 (new): The magnetic shield of Claim 30, further comprising:
2 each top edge of each short side of the hollow rectangular frustum has a short side
3 extension of height H2 forming a planar continuation of each short side in the direction of the top
4 of the hollow rectangular frustum, each short side extension being centered along the top edge of
5 each short side, each short side extension having lateral edges separated from the nearest corner
6 joint by a width W2 along the top edge of each short side.

1 Claim 40 (new): The magnetic shield of Claim 39, wherein
2 the width W2 is less than one-half the width of the entire top edge of each short
3 side at the top of the hollow rectangular frustum.

1 Claim 41 (new): The magnetic shield of Claim 39, wherein
2 the top edges of each adjacent long side and short side meet at the corner joints.

1 Claim 42 (new): The magnetic shield of Claim 39, wherein
2 H1 is greater than H2 so that the long side extension is higher than the short side
3 extension.

1 Claim 43 (new): The magnetic shield of Claim 39, wherein
2 each short side extension is substantially a rectangular shape.

1 Claim 44 (new): The magnetic shield of Claim 39, wherein
2 each short side extension is substantially a trapezoidal shape.

1 Claim 45 (new): The magnetic shield of Claim 39, wherein
2 each short side extension is substantially a triangular shape.

1 Claim 46 (new): The magnetic shield of Claim 39, wherein
2 the magnetic flux density generated at the long side extension is higher than the
3 magnetic flux density generated at the short side extension.

1 Claim 47 (new): The magnetic shield of Claim 39, wherein
2 the magnetic flux density generated at the long side extension is higher than the
3 magnetic flux density generated between the long side extension lateral edges and the adjacent
4 short side corner joints.

1 Claim 48 (new): The magnetic shield of Claim 39, wherein
2 the magnetic flux density generated at the short side extension is higher than the
3 magnetic flux density generated between the short side extension lateral edges and the adjacent
4 long side corner joints.

1 Claim 49 (new): The magnetic shield of Claim 39, wherein
2 each short side extension is a plurality of projections.

1 Claim 50 (new): The magnetic shield of Claim 49, wherein
2 the plurality of projections are rectangular.

1 Claim 51 (new): The magnetic shield of Claim 49, wherein
2 the plurality of projections are semicircular.

1 Claim 52 (new): The magnetic shield of Claim 49, wherein
2 the plurality of projections are trapezoidal.

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1 Claim 53 (new): In a magnetic shield for use within a cathode ray
2 tube having at least one source of an electron beam, wherein
3 the magnetic shield is in the shape of a hollow rectangular frustum, the first and
4 third sides of the hollow rectangular frustum being formed of two opposite long sides, the second
5 and fourth sides of the hollow rectangular frustum being formed of two opposite short sides, the
6 interface between each adjacent long side and short side forming corner joints that are
7 continuous from the substantially wider base to the substantially narrower top of the hollow
8 rectangular frustum, the magnetic shield being disposed to surround the path of the electron
9 beam with the top of the hollow rectangular frustum positioned near the source of the electron
10 beam, the electron beam defining an axis from the top to the base of the rectangular frustum, the
11 improvement comprising:
12 the effective magnetic permeability of each long side is higher than the effective
13 magnetic permeability of each short side.
